Amendments

I. In the Claims:

Claims 1-13 (Cancelled).

Claim 14 (Currently amended): A method for cloning or subcloning one or more desired nucleic acid molecules comprising

(a) forming a mixture by combining *in vitro*

(i) one or more first nucleic acid molecules comprising one or more desired nucleic acid segments flanked by at least two recombination sites, wherein said recombination sites do not recombine with each other;

(ii) one or more second nucleic acid molecules each comprising at least two recombination sites, wherein said recombination sites do not recombine with each other;

(iii) at least one recombination protein; and

(iv) at least one ribosomal protein <u>that enhances recombinational cloning</u>; and

(b) incubating said mixture under conditions sufficient to transfer one or more of said desired segments into one or more of said second nucleic acid molecules, thereby producing one or more desired third nucleic acid molecules.

Claim 15 (Currently amended): The method of claim 14, further comprising:

(c) forming a mixture by combining *in vitro*

(i) one or more of said third molecules comprising said desired segments flanked by two or more recombination sites, wherein said recombination sites do not recombine with each other;

(ii) one or more different fourth nucleic acid molecules each comprising two or more recombination sites, wherein said recombination sites do not recombine with each other;

(iii) at least one recombination protein; and

(iv) at least one ribosomal protein that enhances recombinational cloning; and

(d) incubating said mixture under conditions sufficient to transfer one or more of said desired segments into one or more different fourth nucleic acid molecules, thereby producing one or more different fifth nucleic acid molecules.

Claim 16 (Original): The method of claim 14, wherein said ribosomal protein is a prokaryotic ribosomal protein.

Claim 17 (Original): The method of claim 15, wherein said ribosomal protein is a prokaryotic ribosomal protein.

Claim 18 (Previously presented): The method of claim 14, further comprising incubating said different third nucleic acid molecules with one or more different fourth

nucleic acid molecules under conditions sufficient to transfer one or more of said desired segments into said different fourth nucleic acid molecules.

Claim 19 (Currently amended): A method for cloning or subcloning desired nucleic acid molecules comprising:

(a) forming a mixture by combining *in vitro*

(i) one or more first nucleic acid molecules comprising one or more nucleic acid segments flanked by two or more recombination sites, wherein said recombination sites do not recombine with each other;

(ii) two or more different second nucleic acid molecules each comprising two or more recombination sites, wherein said recombination sites do not recombine with each other;

(iii) at least one recombination protein; and

(iv) at least one ribosomal protein <u>that enhances recombinational cloning</u>; and

(b) incubating said mixture under conditions sufficient to transfer one or more of said desired segments into said different second nucleic acid molecules, thereby producing two or more different third nucleic acid molecules.

Claim 20 (Original): The method of claim 19, wherein said ribosomal protein is a prokaryotic ribosomal protein.

Claim 21 (Original): The method of claim 14, wherein said ribosomal protein is an *Escherichia coli* ribosomal protein.

Claim 22 (Original): The method of claim 14, wherein said ribosomal protein is a basic ribosomal protein.

Claim 23 (Original): The method of claim 14, wherein said ribosomal protein has a molecular weight of less than about 14 kilodaltons.

Claim 24 (Original): The method of claim 21, wherein said *E. coli* ribosomal protein is selected from the group of *E. coli* ribosomal proteins consisting of S10, S14, S15, S16, S17, S18, S19, S20, S21, L21, L23, L24, L25, L27, L28, L29, L30, L31, L32, L33 and L34.

Claim 25 (Original): The method of claim 21, wherein said ribosomal protein is S20.

Claim 26 (Original): The method of claim 21, wherein said ribosomal protein is L27.

Claim 27 (Original): The method of claim 21, wherein said ribosomal protein is S15.

Claim 28 (Original): The method of claim 19, wherein said recombination protein is a prokaryotic recombination protein.

Claim 29 (Previously presented): The method of claim 14, wherein said recombination protein is selected from the group consisting of Int, Cre, FLP, Xis, IHF, FIS and HU, and combinations thereof.

Claim 30 (Original): The method of claim 14, wherein said recombination protein is Int.

Claim 31 (Currently amended): A method for enhancement of recombinational cloning of one or more desired nucleic acid molecules comprising:

(a) forming a mixture by mixing *in vitro* one or more desired first nucleic acid molecules with one or more second nucleic acid molecules and with at least one ribosomal protein that enhances recombinational cloning and an effective amount of at least one recombination protein; and

(b) incubating said mixture under conditions sufficient to transfer said one or more desired first nucleic acid molecules into one or more of said second nucleic acid molecules.

Claim 32 (Previously presented): The method of claim 31, wherein said desired nucleic acid molecules are obtained from genomic DNA.

Claim 33 (Previously presented): The method of claim 31, wherein said desired nucleic acid molecules are obtained from cDNA.

Claim 34 (Original): The method of claim 31, wherein said desired nucleic acid molecules are produced by chemical synthesis.

Claim 35 (Original): The method of claim 31, wherein said desired nucleic acid molecules are produced by amplification.

Claim 36 (Original): The method of claim 31, wherein said vector is a prokaryotic or eukaryotic vector.

Claim 37 (Previously presented): The method of claim 36, wherein said eukaryotic vector replicates in yeast cells, plant cells, fish cells, eukaryotic cells, mammalian cells, or insect cells.

Claim 38 (Previously presented): The method of claim 31, wherein said prokaryotic vector replicates in bacteria of the genera *Escherichia*, *Salmonella*, *Bacillus*, *Streptomyces* or *Pseudomonas*.

Claim 39 (Previously presented): The method of claim 38, wherein said prokaryotic vector replicates in *E. coli*.

Claim 40 (Currently amended): A method for enhancement of recombinational cloning, comprising contacting at least a first nucleic acid molecule and at least a second

nucleic acid molecule, each comprising at least one recombination site, *in vitro* with one or more ribosomal proteins that enhance recombinational cloning and with one or more recombination proteins to form a mixture, and incubating said mixture under conditions favoring the production of at least one product nucleic acid molecule.

Claim 41 (Original): The method of claim 40, wherein said ribosomal protein is a prokaryotic ribosomal protein.

Claim 42 (Original): The method of claim 40, wherein said ribosomal protein is an *Escherichia coli* ribosomal protein.

Claim 43 (Original): The method of claim 40, wherein said ribosomal protein is a basic ribosomal protein.

Claim 44 (Original): The method of claim 40, wherein said ribosomal protein has a molecular weight of less than about 14 kilodaltons.

Claim 45 (Original): The method of claim 42, wherein said *E. coli* ribosomal protein is selected from the group of *E. coli* ribosomal proteins consisting of S10, S14, S15, S16, S17, S18, S19, S20, S21, L21, L23, L24, L25, L27, L28, L29, L30, L31, L32, L33 and L34.

Claim 46 (Original): The method of claim 42, wherein said ribosomal protein is S20.

Claim 47 (Original): The method of claim 42, wherein said ribosomal protein is L27.

Claim 48 (Original): The method of claim 42, wherein said ribosomal protein is S15.

Claim 49 (Original): The method of claim 40, wherein said recombination protein is a prokaryotic recombination protein.

Claim 50 (Previously presented): The method of claim 40, wherein said recombination protein is selected from the group consisting of Int, Cre, FLP, Xis, IHF, FIS and HU, and combinations thereof.

Claim 51 (Original): The method of claim 40, wherein said recombination protein is Int.

Claims 52-64 (Cancelled).

Claim 65 (Previously presented): The method of claim 31, wherein said ribosomal protein is a prokaryotic ribosomal protein.

Claim 66 (Previously presented): The method of claim 31, wherein said ribosomal protein is an *Escherichia coli* ribosomal protein.

Claim 67 (Previously presented): The method of claim 31, wherein said ribosomal protein is a basic ribosomal protein.

Claim 68 (Previously presented): The method of claim 31, wherein said ribosomal protein has a molecular weight of less than about 14 kilodaltons.

Claim 69 (Previously presented): The method of claim 66, wherein said *E. coli* ribosomal protein is selected from the group of *E. coli* ribosomal proteins consisting of S10, S14, S15, S16, S17, S18, S19, S20, S21, L21, L23, L24, L25, L27, L28, L29, L30, L31, L32, L33 and L34.

Claim 70 (Previously presented): The method of claim 66, wherein said *E. coli* ribosomal protein is S20.

Claim 71 (Previously presented): The method of claim 66, wherein said *E. coli* ribosomal protein is L27.

Claim 72 (Previously presented): The method of claim 66, wherein said *E. coli* ribosomal protein is S15.

Claim 73 (Previously presented): The method of claim 31, wherein said recombination protein is a eukaryotic recombination protein.

Claim 74 (Previously presented): The method of claim 31, wherein said recombination protein is selected from the group consisting of Int, Cre, FLP, Xis, IHF and HU, and combinations thereof.

Claim 75 (Previously presented): The method of claim 31, wherein said recombination protein is Int.

Claim 76 (Previously presented): The method of claim 31, wherein said composition further comprises one or more nucleic acid molecules selected from the group consisting of one or more Insert Donor molecules, one or more Vector Donor molecules, one or more Cointegrate molecules, one or more Product molecules and one or more Byproduct molecules.

Claims 77-80 (Cancelled).

Claim 81 (Previously presented): The method of claim 14, wherein said ribosomal protein is a recombinant ribosomal protein.

Claim 82 (Previously presented): The method of claim 19, wherein said ribosomal protein is a recombinant ribosomal protein.

Claim 83 (Previously presented): The method of claim 31, wherein said ribosomal protein is a recombinant ribosomal protein.

Claim 84 (Previously presented): The method of claim 40, wherein said ribosomal protein is a recombinant ribosomal protein.

Claim 85 (Previously presented): The method of claim 14, wherein said recombination protein is a recombinant recombination protein.

Claim 86 (Previously presented): The method of claim 19, wherein said recombination protein is a recombinant recombination protein.

Claim 87 (Previously presented): The method of claim 31, wherein said recombination protein is a recombinant recombination protein.

Claim 88 (Previously presented): The method of claim 40, wherein said recombination protein is a recombinant recombination protein.

Claim 89 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said at least one recombination protein is at least one isolated Int protein and at least one isolated IHF protein.

Claim 90 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said at least one recombination protein is at least one isolated Int protein, at least one isolated IHF protein and at least one isolated Xis protein.

Claim 91 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture further comprises at least one isolated FIS protein.

Claim 92 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture further comprises spermidine.

Claim 93 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture further comprises Tris-HCl.

Claim 94 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture further comprises ethylenediamine tetracetic acid (EDTA).

Claim 95 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture further comprises bovine serum albumin (BSA).

Claim 96 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture further comprises at least one additional isolated recombination protein selected from the group consisting of a Cre protein, an FLP protein, a $\gamma\delta$ protein, a Tn3 resolvase protein, a Hin protein, a Gin protein, and a Cin protein.

Claim 97 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said recombination protein is at least one isolated Cre protein.

Claim 98 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture comprises at least one isolated Int protein, at least one isolated IHF protein, spermidine, Tris-HCl, EDTA and BSA.

Claim 99 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture comprises at least one isolated Int protein, at least one isolated IHF protein, at least one isolated Xis protein, spermidine, Tris-HCl, EDTA and BSA.

Claim 100 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture comprises at least one isolated Int protein, at least one isolated IHF protein and spermidine.

Claim 101 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said mixture comprises at least one isolated Int protein, at least one isolated IHF protein, at least one isolated Xis protein and spermidine.

Claim 102 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said first or second nucleic acid molecule is an Insert Donor nucleic acid molecule.

Claim 103 (Previously presented): The method of any one of claims 14, 15, 19, 31 and 40, wherein said first or second nucleic acid molecule is a Vector Donor nucleic acid molecule.

Claim 104 (Previously presented): The method of claim 15, wherein said fourth nucleic acid molecule is a Vector Donor nucleic acid molecule.